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(71) Applicant (for all designated States except US): **JOHN-
SON MATTHEY PLC** [GB/GB]; 2-4 Cockspur Street,
Trafalgar Square, London SW1Y 5BQ (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **DOMINGUEZ**,
Beatriz, Dominguez [ES/GB]; 8 Russet Close, Bury
St. Edmunds, Suffolk IP32 7HD (GB). **HEMS**,
William, Patrick [GB/GB]; 2 Whitehouse Gardens,
Poringland, Norwich, Norfolk NR14 7RG (GB). **ZAN-
OTTI-GEROSA**, Antonio [IT/GB]; 44 York Street,
Cambridge CB1 2PY (GB).

(74) Agents: **GIBSON, Sara, Hillary, Margaret et al.**; Intel-
lectual Property Department, Johnson Matthey Catalysts,
PO Box 1, Belasis Avenue, Billingham, Cleveland TS23
1LB (GB).

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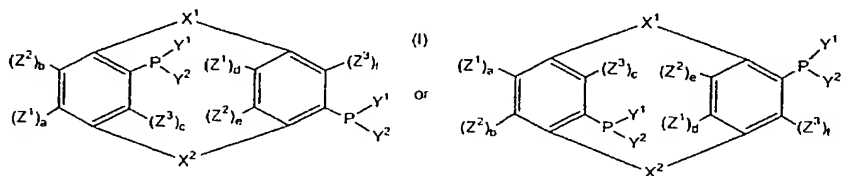
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(57) Abstract: A substituted paracyclophane is described of formula (I) wherein X¹ and X² are linking groups comprising between 2 to 4 carbon atoms, Y¹ and Y² are selected from the group consisting of hydrogen, halide, oxygen, nitrogen, alkyl, cycloalkyl, aryl or heteroaryl, Z¹, Z² and Z³ are substituting groups that optionally contain functional groups, a, b, c, d, e and f are 0 or 1 and a + b + c + d + e + f = 1 to 6. Preferably X¹ and X² are -(C₂H₄)- and a + b + c + d + e + f = 1 or 2. The substituted paracyclophane provides transition metal catalysts that demonstrate high activity and selectivity for asymmetric reactions.